

## **WHAT IS CLAIMED IS:**

1. A waveguide photodetector comprising:  
lower and upper cladding layers;  
an absorbing layer for functioning as a core layer of a waveguide, the absorbing layer being provided between the lower and upper cladding layers;  
and  
an spacer being provided between the absorbing layer and the lower cladding layer, the spacer having a band gap which is higher than that of the absorbing layer and is equal to or lower than that of the lower cladding layer, the spacer having an index of refraction which is similar to that of the absorbing layer and is equal to or higher than that of the lower cladding layer.
2. The waveguide photodetector according to claim 1,  
wherein the absorbing layer is formed in a thickness of  $0.2\mu\text{m}$  or less to have a wide distribution of light intensity, and  
wherein the absorbing layer is made up of a material of which difference of the index of refraction from that of the upper cladding layer is less than 0.2.
3. The waveguide photodetector according to claim 1, wherein the spacer is made up of a material which is the same as that of the lower cladding layer.
4. The waveguide photodetector according to claim 1, wherein the band gaps of the spacer and the absorbing layer are adjusted to obtain a desired

operating speed.